and are within limits of accuracy expected for modeling of the complex flow conditions of the AICW.

The simulations for the Myrtlewood-to-Highway 9 boundary conditions were performed with a 15-minute time step and a value of 0.85 for the discretization weighting factors. The convergence criterion of 95 ft^3/s was satisfied within five iterations.

Calibration was achieved by selecting friction resistance coefficients of 0.0153 for cross-sections 1 to 5, 0.0207 for cross-section 6, and 0.0216 for cross-sections 7-10, for the combinations of the Highway 544, Myrtlewood Golf Course, and Highway 9 boundary conditions. A field estimate of the friction-resistance coefficient for the Myrtlewood-to-Briarcliff reach was 0.026. However, the International Organization for Standardization (1983), and Horton (1916) report coefficients of 0.016 and 0.017 respectively for straight, uniform, clean earth channels or canals such as the AICW. The range of calibrated friction-resistance coefficients of 0.0153 to 0.024 seems reasonable in comparison with documented values.

The calibrated and verified model was used to simulate the daily mean discharge at the Myrtlewood Golf Course gage for the period October 15, 1982, to September 30, 1986. Daily mean discharges are for all practical purposes the same whether computed at Briarcliffe Acres or Myrtlewood Golf Course. Daily mean discharges are shown in table 4.

Sensitivity of the Model

An analysis of the Myrtlewood Golf Course to Briarcliffe Acres model was made to determine the sensitivity of simulated discharge to water-surface fall and wind velocity -- the two primary driving forces. Solutions were determined by simulating daily discharge for a given period of record and specified constant wind speed and direction or datum change. A sufficient number of simulations were performed to develop relations between simulated discharge unaffected by wind or datum and the change in discharge due to the effect.

In the sensitivity analysis for errors in datum, stage at the Briarcliffe Acres gage was varied to produce, for each time step, an increased or decreased water surface fall which ranged from ± 0.01 to ± 0.10 ft through the modeled reach. Results show that the difference between simulated base discharge and datum-affected discharge increases as the absolute value of the datum increases (fig. 8).

For a base discharge of 500 ft^3/s and a datum change of ± 0.03 ft, the change in discharge is approximately 100 ft^3/s or 20 percent. If a base discharge of 200 ft^3/s is selected for the same datum change, the change in discharge is approximately 96 ft^3/s or 48 percent. Thus, simulations of flow are sensitive to small errors in stage data, particularly at low daily mean discharge values.

The flow of the AICW can also be significantly affected by wind conditions. The effect of wind direction on simulated discharge for